MONTANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

ONE STOP REPORTING PROGRAM GRANT APPLICATION

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MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
YEAR 2000 ONE STOP PROGRAM GRANT PROPOSAL

OVERVIEW

The State of Montana is committed to the use of information technology (IT) to improve the services and delivery of information to its citizens. State agencies, through the Governor's Information Technology Advisory Council (ITAC), the Information Technology Manager Group (ITMG), and the Department of Administration – Information Services Division, have established a dynamic information technology architecture, IT plan and standards designed to keep pace with rapidly changing business needs. Governor Marc Racicot has established an open government policy and corresponding mandate that state government resources, information, and decision-making processes will be fully open to the public. He has enthusiastically endorsed the application of information technology and enterprise data systems as key means to open, efficient government and publicly accessible information.

The Montana Department of Environmental Quality (DEQ) was formed by a reorganization of three state agencies in 1995. The new department was reorganized under a functionally oriented model designed to provide public one-stop access to environmental program resources and information. The department is now completing a comprehensive three-year IT planning effort and has been working to articulate its IT vision, goals and identify the incremental implementation steps needed to optimize agency efficiency, effectiveness and public information access. The agency has reorganized its internal IT structure and has established IT coordination and management mechanisms designed to guide implementation of its IT plan. EPA One Stop Reporting Program grant funds are being requested to support implementation of the department's IT plan.

STATE OF MONTANA INFORMATION TECHNOLOGY PLAN

The State of Montana is committed to providing a strong information technology enterprise, organization and tools to enable state agencies to focus on core business competencies and to efficiently deliver information and services to Montana citizens. IT sponsorship comes from the citizens' representatives – the legislators. Montana's legislative body supports the IT enterprise by participating on IT committees, enacting IT statute, and appropriating funds for IT initiatives. The vision for using IT to achieve efficient and effective Montana State government services comes from the legislature and top management in the executive, legislative and judicial branches. This vision is vital to Montana, because without vision and direction, the IT enterprise can struggle in a status quo, non-progressive, reactive mode with little return on technology investments.

State agencies have established an enterprise information technology architecture (ITA) to link the physical components of IT to the business objectives defined by the organizations. The State of Montana's ITA is administered through the enterprise organization composed of the Governor's Information Technology Advisory Council (ITAC), the SummitNet Executive

Council (SEC), the Information Technology Managers' Group (ITMG), the Department of Administration – Information Services Division (ISD), and agency information technology organizations.

These state IT advisory groups and agencies work as a team to set standards for enterprise computing hardware, software, and telecommunications. Using the enterprise organization to manage the ITA encourages: hardware platform connectivity; application and database sharing; the development of high-speed transmission mediums for voice, data, video, and imaging; the establishment of worker competency levels and training support; and software acquisitions that are compliant with established hardware and network standards. The ITA also supports important business goals such as providing faster, convenient, and more accurate services to Montana citizens; promoting cost-effective IT use; and increasing worker productivity. Montana's information technology plan is revised biennially and establishes a foundation and direction for IT strategic planning at the state and agency levels. The State of Montana comprehensive IT plan can be viewed at http://www.state.mt.us/isd/planning/index.htm.

DEPARTMENT OF ENVIRONMENTAL QUALITY INFORMATION TECHNOLOGY PLAN

Background

The Montana Department of Environmental Quality (DEQ) came into existence on July 1, 1995 with the passage of Senate bills 234 and 345 by the 1995 Montana Legislature. The new department merged the environmental programs from the former Department of Health and Environmental Sciences, the Energy Division from the Department of Natural Resources and Conservation, and the Reclamation Division from the former Department of State Lands. The rationale behind this merger was to centralize and streamline the natural resource regulatory functions of state government in order to create "one-stop" public access to program resources and information. Commensurate with this philosophy, the department has been organized under functional lines in order to group similar services for ready public access. The department's mission, functions, and organizational structure are presented in detail at its website located at http://www.deq.state.mt.us.

The agency founding fathers' vision included prominent roles for information technology and electronic information management systems to ensure efficient department operation, facilitate coordination and communication between functionally based work units, and provide efficient public access to department services. Despite this expectation, no detailed plan was provided as to how to accomplish this goal. At the same time, many other unique challenges and opportunities became apparent within the new agency. For example, each former agency merged into the new DEQ had maintained different kinds of computer systems and was organized in functionally distinct ways. Over 160 different software packages and databases required support from a combination of centralized and decentralized information technology staff resources. Maintenance of these disparate systems presented a formidable task. It became immediately clear that a plan was needed to standardize, integrate, and increase the overall utility of environmental information management systems department-wide.

During the 1995-1996 departmental organization, an immediate priority was to construct an agency-wide computer network capable of supporting four office locations statewide and 17 individual bureau work units. This accomplished, the department's senior management team (director's office and division administrators) initiated a more comprehensive information services planning effort. In 1997, they commissioned an Information Technology (IT) Planning Team and directed team members to gather information and develop "a range of alternatives for information management, access and reporting, including the methods and equipment necessary to fully serve the needs of DEQ, other agencies, industry, the public, and special interest groups." The IT Planning Team was directed to work with existing IT advisory groups at the state level to develop alternatives, and recommend methods, schedules, and sequences for implementing each alternative. The resulting report was completed in 1998 and was presented to the senior management team. The report encompassed general recommendations on most aspects of the department's information management systems and the utilization of information technology including network infrastructure, desktop workstations, desktop operating systems, desktop software, enterprise-wide databases, Internet applications, geographic information systems, IT staff organizational principles and structure, and staff training. The IT Planning Team charter and summary report are included in Appendix A to this document.

Several other key measures were undertaken to set the stage for a comprehensive reform of the agency's environmental information management systems. In 1998, a contractor was hired to examine the inter-relationships between department data systems and to make more specific recommendations regarding enterprise-wide data systems. A second contract was issued to examine the roles of information systems in department operations, begin to evaluate stakeholder needs, and recommend an efficient department information technology operational structure. Excerpts from each of these contractor reports are included in appendices B and C. In 1999, the department's IT structure was recreated following contractor recommendations with full support from the DEQ director (Appendix D). Two new IT work units were established -- a Systems Administration Bureau, responsible for department computer network infrastructure, support, and maintenance, and a Systems Solutions Bureau, to provide support and consistency to program level computer applications while leveraging available resources to support a longer-term goal of database integration. Late in 1999, a department work team was established to begin to implement the Facility Identification Template System (FITS) as the cornerstone for a department enterprise-wide data system (Appendix E). Most recently, a contractor has been retained to assist the department with additional IT planning and to design and implement its planned enterprise-wide data management system (Appendix F).

Collectively, the department's three years of planning efforts and infrastructure development have established a solid foundation for a comprehensive environmental information management system. At the same time, many individual department programs have invested resources in various IT initiatives and applications aimed at enhancing public access to data and information while increasing work unit efficiency. The department is now ready to capitalize on these many investments through an implementation plan.

Department Information Technology Vision and Operating Principles

The department's creation was accompanied with an expectation of seamless, fully integrated, and publicly accessible environmental programs. Concurrently, Montana Governor Marc Racicot established his open government policy and corresponding mandate that state government resources, information, and decision-making processes would be fully open to the public. These two directives were and continue to be key elements of the department's environmental information management vision and principles, expressed below:

- The department's services and functions all relate to the collection, manipulation, and dissemination of information. This "information business" requires state-of-the-art information technology tools and information management systems.

- The 1972 Montana Constitution guarantees its citizens the right to a clean and healthful environment. Citizens of Montana also have a right to know the condition of their environment. Information management systems must be developed that fully support the collection, analysis, and dissemination of such information.

- The department's mission is "to protect, sustain and improve a clean and healthful environment..". This mission includes remedying or avoiding accumulative environmental problems that arise from multiple sources and causes, and involve multiple jurisdictions and programs, both regulatory and voluntary. Public education and local involvement are also necessary elements of this mission. Fulfillment of this mission becomes impossible without ready staff and public access to a wide range of data and information resources. Enterprise-wide systems and Internet based information access are key to future efficiency in this regard.

- The department's functionally based organizational structure, while providing public advantages, presents significant intra-agency communication challenges. The appropriate application of information technology and the availability of fully integrated information systems will be key solutions in addressing this challenge.

- IT services should be administered with a customer service approach that fully meets public and staff needs. The department's IT administrative structure must operate under this principle, must allow for management support and accountability, and should accommodate department-wide priority setting and organized management of network and database development.

- Available IT development resources must be leveraged within and outside the department in order to support multiple program and public needs. Program level IT applications must be encouraged and supported, but must conform to uniform standards and be consistent with a department IT vision and strategic plan.

- Stakeholder information needs are dynamic and should be periodically reevaluated; agency efficiency and effectiveness accomplished through IT applications are best gauged by the department's clients.

Department Information Technology Goals and Objectives

The department has outlined specific IT policies, standards, goals and objectives within an Information Technology Strategic Plan. The plan is accessible through the department web site at http://www.deq.state.mt.us.or via a link from the ECOS WISER web site located at http://www.ecos.org/wiser. The IT strategic plan is organized in separate sections that address system infrastructure standards and strategic direction, and department IT objectives, current status, and future action plans. The plan has been developed to be sensitive to the dynamic needs and requirements of the legislature, department, public, and on-going technological changes. Each infrastructure section specifies a lifecycle for direction, services, and products based on the above requirements. The department's IT plan addresses the following general goals:

- Provide access and timely sharing of data across all natural resource agencies. These agencies include local, county, state, federal, and public organizations involving the regulated community and general public.

- Create the necessary management information structure that can display data for decision-makers and interested parties.

- Create electronic means and methods for a paperless environment to reduce time and cost associated with environmental decisions.

Additional IT goals are articulated in sections of the plan that follow.

Infrastructure components of the IT plan are appended to this application, as follows:

G. Network Architecture
H. Server Operating Systems
I. Work Station Operating Systems
J. Standard Core Products
K. Database Standards
L. Web Server Standards
M. Browser Standards
N Web Publishing Standards
O. Geographic Information Systems Standards
P. Project Standards
Q. Backup Systems
R. Display Standards
S. Computer Replacement
T. Computer Purchase
U. Printer Purchase

Department IT objectives, status and action plans for data integration, burden reduction, stakeholder needs analysis, electronic reporting, and public access are presented in the sections which follow.

Data Integration

Objective

A great commitment has been made on the part of DEQ upper management to support initiatives that facilitate the creation and maintenance of a single enterprise database. It is the goal of the department to integrate all the data regarding regulated sites (names, locations, and affiliations) into one relational Oracle database. By integrating these data, the department will increase the availability of site and related permitting, remediation and enforcement data within the department and to the public, as well as decreasing the time involved in data entry and maintenance.

Current Status

Several programs within the DEQ Permitting and Compliance Division have developed an integrated relational database in Oracle (ISOP – The Integrated System for Organizing Permits) to integrate a multitude of incompatible flat file and relational database tracking systems. The database design incorporates the FITS for site information and also accommodates the permitting, compliance, inspections, environmental data, and reporting needs of the programs. The design is complete and web-based applications are being developed to support data entry and query.

A FITS committee was formed to review and modify the site information module of the database, and adjustments are being made to support the business processes of a wider range of programs within the department and the changes recommended by FITS2. The Committee considered the recommendations and experience of the State of Washington in making their recommendations to the management team of DEQ. The finalized site information template design will become the basis for all future relational database development at DEQ.

The Air and Waste Management and Water Protection programs are beginning legacy database system conversion into the ISOP database. Contracts have been signed to develop applications and integrate the data for two of these bureaus and budget has been requested to do the same for the rest of the Permitting and Compliance Division and for the Enforcement and Legal Divisions of the department. The addition of these programs into a single database using the FITS template is highly supported and an extremely positive start to the DEQ enterprise database.

While the web applications developed to date are for intranet use, it will be a small matter to turn the applications out to the public to enhance public access to the department's data, including monitored environmental parameters, application and permit status, and compliance and enforcement issues.

Action Plan

The department will continue to pursue implementation of an integrated facility database according to the following timetable:

August 2000	Begin user acceptance analysis and testing of FITS and initial core permitting module. Begin pre-planning for system integration of AIRS, asbestos and hazardous waste programs.
September 2000	Perform modifications to initial core and FITS and move to full production.
October 2000	Begin data integration for AIRS, asbestos and hazardous waste. Begin pre-planning for data integration within Water Protection Bureau.
November 2000	Begin user acceptance analysis and testing of AIRS, asbestos and hazardous waste system.
December 2000	Perform modifications to AIRS, asbestos and hazardous waste systems. Move to full implementation of AIRS, asbestos and hazardous waste systems.
January 2001	Perform management evaluation of contractor, direction, and priorities for calendar year and revise schedule as needed.
March 2001	Begin data integration within Water Protection Bureau (tentative).
June 2001	Perform user acceptance analyses and testing of Water Protection Bureau Systems (tentative).
July 2001	Perform needed modifications to Water Protection Bureau systems (tentative).
August 2001	Move to full implementation of Water Protection Bureau systems (tentative).

We have left windows of opportunity open during the January to March timeframe to accommodate additional priorities as defined by the management team. With a full compliment of IT personnel and additional resources provided through this grant, the department intends to accelerate project pace and expand the action plan through calendar year 2003.

Burden Reduction

Objective

It is Montana DEQ's goal to reduce duplication of data in its dozens of databases and mailing lists. The desire to share information across programs and streamline the permitting and regulatory processes has also been expressed. It is the long-range goal of programs in the department to allow full public access to the information stored in our databases and to allow on-line application and annual report filing. This will empower the public with the access they want

to the information they need. It will also limit the amount of time necessary to enter information into the database from paper applications and reports.

Current Status

In the experience of individual DEQ programs, electronic reporting initiatives often lead to a reduction in burden on the regulated community. For example, the submission of electronic hydrologic data and spatial information by regulated industry in the coal regulatory program during the permit application and review process has significantly enhanced the permit process and is seen as desirable by both review staff and the regulated community. Issues to be resolved within all programs include proper and preferred data formats, streamlined transfer mechanisms for data exchange and data security and maintenance issues. For true reductions in reporting burdens to occur, the needs of our regulated community must be articulated. We hope to accomplish this through thorough additional stakeholder analyses focused on individual programs and regulatory requirements within the agency.

Action Plan

As a result of the on-going stakeholder process, burden reduction on the regulated community will be incorporated into the integration process. These actions will be defined, prioritized and scheduled by direction of the department's management team with consideration given to legislative mandates and department resource availability.

The department intends to conduct well-organized stakeholder analyses of the reporting and procedural burdens upon DEQ-regulated parties, and develop possible business process changes and information systems applications for addressing problematic areas that are identified during these analyses. Some previously targeted areas for potential development include: streamlining the application, permitting and monitoring processes through electronic data submission guidelines for the regulated community; the provision of additional web-based permit application, direct environmental monitoring and reporting opportunities for the regulated community; and public empowerment initiatives through additional web-based data access tools.

Stakeholder Process

Objective

The Stakeholder Process involves providing opportunities for anyone internal and external to DEQ for meaningful and constructive input regarding the development of information management in the department. The relevant information regarding priorities, needs, and mandates is used in the development of the department's IT plan and the development of the department's integrated information management systems.

Current Status

In the past, DEQ has conducted several stakeholder analysis efforts. Most department-wide

efforts have focused on internal stakeholder interests with the assistance of outside contractors. The focus has been in systems development efforts and organizational functions. The department's IT Planning Team also performed a stakeholder analysis when developing its plan. This plan led to the reorganization of information technology functions in the department. Although several external stakeholder efforts have been conducted on a programmatic basis, none have been done on a department-wide basis. Smaller sessions have occurred in conjunction with other meetings or training events that related to specific program-level IT applications, such as the development of the MontanaView integrated GIS database. A significant amount of stakeholder analyses has also occurred in general meetings and other venues when discussing systems requirements of modules to the integrated enterprise database efforts. However, a comprehensive effort to analyze stakeholder needs department-wide, and to incorporate those needs on a prioritized basis into the department's IT plan, has not occurred.

Action Plan

During the next two to five years the DEQ would like to increase stakeholder participation and provide increased documentation of stakeholder input. The department intends to conduct well-organized stakeholder analyses of the reporting and procedural burdens upon DEQ-regulated parties, and develop possible business process changes and information systems applications for addressing problematic areas that are identified during these analyses. Some previously targeted areas for potential development include: streamlining the application, permitting and monitoring processes through electronic data submission guidelines for the regulated community; the provision of additional web-based permit applications, direct environmental monitoring and reporting opportunities for the regulated community; and public empowerment initiatives through additional web-based data access tools. The department will also continue to develop and foster additional partnerships for sharing information with other state and federal agencies.

Electronic Reporting

Objective

The department proposes to investigate and utilize appropriate data transfer and storage technologies to encourage paperless data exchange for department business functions. The department is committed to enabling not only regulated entities, but all stakeholders that have business requirements with the department, to submit and receive data in a computer-to-computer environment.

Current Status

The department's Monitoring and Data Management Bureau is currently accepting air quality data (ambient PM-10 particulate data) from regulated facilities in either hardcopy or floppy disc (AIRS) format. The air quality data technician then creates a "Mini Master" for routing internally within the bureau for quality assurance review purposes. The Mini Master is sent back to the regulated facility by regular mail for additional QA analysis. After the regulated facilities are finished with their data checks the Mini Master is returned to the bureau for a final review

prior to being uploaded into the EPA AIRS-AQS database. The process in its entirety can take several months to complete.

As a pilot project to demonstrate the benefits of electronic data submittal, the bureau has created the Air Internet Data Acquisition System (AirIDAS). This web-enabled system allows companies throughout the state to quickly and easily report daily air quality data for review by Montana DEQ. This system allows all of the stakeholders (the regulated facilities, the database administrator, and the air quality technicians) to enter and review air quality data simultaneously. With this type of data collection system fully implemented, the department hopes to demonstrate and realize savings in time and money, enhance data quality, and improve the speed and ease of data access. This system will also allow the regulated facilities to save time and money in reporting costs, have greater control of data in the submission process, realize new opportunities to improve internal management of environmental data, and achieve a streamlined data submission process.

Once the EPA has implemented the new AIRS format for data submittal (the IDAS converts the submitted data to the new format), DEQ would like to begin testing the AirIDAS with a number of selected facilities.

The bureau is also in the process of designing a Water Internet Data Acquisition System (WaterIDAS) that has many of the same beneficial characteristics as the AirIDAS. A contract is in place with the Montana State University Water Center to develop a web-enabled system that will set up accounts for department water quality monitoring cooperators (conservation districts, local watershed groups, universities, and others) to allow them to have water quality data entered into the EPA STORET database. Through this process, data collected by those entities that have a vested interest in the quality of surface water in their locality can have their data more thoroughly considered in the department's statewide water quality and TMDL assessment procedures. The bureau is working with a local conservation district in developing a prototype system.

The department has developed several other electronic reporting applications that address specific program needs. A comprehensive approach based on additional stakeholder analyses is needed whereby individual applications can be prioritized and leveraged department-wide.

Action Plan

The department recently participated in a National Governor's Association-Center for Best Practices conference on electronic reporting initiatives. The prototype AirIDAS system was presented for peer review and the department was afforded an opportunity to learn more about the following EPA initiatives: the Electronic Data Exchange Initiative (EDI), the Cross-Media Electronic Reporting and Recordkeeping Rule (CROMERRR), and the Central Data Exchange (CDX). DEQ intends to develop a plan to implement the appropriate quality assurance, trading partner agreements, and electronic signature security requirements implemented by the NGA-Center for Best Practices. The department will participate in pilot projects for the testing and implementation of the Central Data Exchange initiative and will expand its electronic reporting efforts over the next several years based on additional stakeholder needs assessment.

Public Access

Objective

An informed public is essential to meeting the DEQ's mission to protect human health and the environment. Many department priority initiatives require active public involvement in order to be successful. Effective access to environmental information facilitates public participation in environmental protection.

Current Status

The explosive growth of the Internet as a widely available medium for data distribution and access has revolutionized techniques and technologies used to make information available. Although initially limited to textual and tabular data, in more recent years it has become technically feasible to serve spatially enabled (GIS) data over the Internet.

In Montana, GIS development, and more recently web-enabled access to information using GIS tools, has been pioneered by the Montana State Library, Natural Resource Information System (NRIS). By focusing such leading edge development in a library setting equally accessible to all state agencies, Montana has been able to combine the limited funding available from several agencies to accomplish for the whole what would not be possible through individual, non-coordinated efforts. DEQ has a long history of successful utilization of NRIS to serve its GIS needs, and is now leveraging that success to extend that GIS functionality to the Internet.

The basic system architecture currently in use by DEQ, in conjunction with NRIS, to present environmental data includes three NT servers: data, web, and application. The data environment includes Microsoft SQL Server and ESRI's Spatial Database Engine (SDE). Data development utilizes ESRI's ArcInfo. Web serving of the application uses ESRI's Map Objects Internet Map Server. Application development is done with Microsoft Visual Basic and Active Server Pages, and ESRI's Map Objects

Use of Standardized Data

The information access system utilizes a significant amount of standardized base data that is readily available from federal and state governments, and other sources. Included in this base data is the National Hydrographic Dataset, STORET (water quality), the Census Tiger files (county boundaries, roads, railroads, etc), and standardized data from the Natural Heritage Program.

Geographic Query Support

The main focus of the information access system is to provide the public with data access and tools that allow retrieval and processing of geographically referenced natural resource information. The application environment provides a robust, geographical search engine that could be widely applied in any data access environment. It enables patrons to pose questions about a particular county, watershed, legislative district, national forest or other geographic units of interest. Questions such as "How much land in my county is owned by the U. S. Forest

Service?", "How many miles of streams in my watershed contain the threatened bull trout?", “What contaminant sources are within a stated distance up-gradient from a public water supply source” or "Are there any endangered species on public land in my legislative district?" can all be addressed with the current applications environment.

Online Map Generation

Once users have found their particular area and data themes of interest, the system enables them to take these criteria, and build and display maps online. The end products are maps that are customized and adapted to the specific needs of the user. The user can print the maps directly from the screen, download as an image for incorporation into other programs (Word, PowerPoint, etc.), send them to a colleague or download the source data in its native format for incorporation into standalone GIS applications (ArcInfo, ArcView). Ad hoc, custom designed maps provide a powerful tool for viewing and analyzing data, that to-date, are largely unavailable over the Internet.

Online Data Analysis

Finally, the system provides a robust data analysis and reporting tool with built-in security functions. Once a user has selected a geographic area and several map themes of interest, the applications give the user the option to generate reports or summaries from the data underlying the map image. For example, if a user is interested in streams in their county that might have water quality impairment, the map can show those streams in red, while the report generator details the scope and underlying data documenting the impairment.

The enormous power and reach of the Internet raises issues of access to sensitive, proprietary or otherwise restricted information, both public and private. This is a frequently encountered barrier for institutions trying to assemble and provide broad access to comprehensive geographic information and it impacts the success of their efforts. DEQ/NRIS applications will address this problem by developing tools that enable applications to accommodate data of a sensitive nature (i.e., detailed land ownership and precise locations of endangered species) by limiting the level of detail available through the Internet. For instance, it will be possible to access digital maps showing the general distribution of an endangered species, while precise or fine-scale locational information will be shielded. DEQ believes this will open the door to providing datasets that would otherwise remain effectively inaccessible.

With the combination of standardized data, geographic query support, and ad-hoc mapping, data analysis and reporting, the applications DEQ develops will provide a fully featured and powerful model for distributing and analyzing spatially referenced data of any type, using base data, technology, and tools that are readily available.

Access to the information generated and stored by many DEQ programs is currently under development using this architecture. Information systems being integrated in this manner include Montana EnviroNet, Public Water Supply, Source Water Protection, Montana Inactive Mine Locator, and Montana Underground Storage Tank (MUST)Access.

The department has partnered up with Yellowstone County in a public access project that would allow air quality information in the Billings metropolitan area to be served to the public via the Internet. This project has been funded by the EPA EMPACT grant and will be the first air quality project to serve sulfur dioxide information.

Action Plan

Expanding the use of the World Wide Web to serve DEQ information to the public is an integral component of information technology reform within the DEQ. Programmed development of DEQ's public access to information methodologies include:

- Continued testing and improving the access provided through NRIS;
- Expansion of that access methodology to the information generated and stored by other DEQ programs;
- Further development of DEQ's in-house GIS and Web capabilities to augment those provided through NRIS

Candidate Information Systems

DEQ programs whose information systems are considered to be active candidates for porting to the DEQ/NRIS map-based access system include:

- State Of Montana STORET
- Safe Drinking Water Information System
- DEQ Enterprise database, FITS enabled

Major Project Summaries

Objectives

As a result of the information technology reforms within DEQ, one of the realizations is that current technologies enable the department to dramatically increase the availability of environmental information to anyone in a timely, flexible, more readily understood, and inherently easy to use manner. Potential users include the public, governmental agencies, organizations, and educational institutions.

Current Status

The department has expended considerable effort over the past two years in expanding public access to its environmental information systems and data. Several recent examples are profiled below.

1. Water Quality Information Website

As required by HB 596 passed by the 1999 Montana Legislature, DEQ must "at intervals not to exceed 5 years, compile and when necessary update department organizational information, statues, rules, permitting information, standards, and bulletins related to water quality." The first

compilation was required to be completed and available in hard copy and for electronic access by January 31, 2000. Due to this mandate, a water quality information Internet website has been developed by DEQ. Information pertaining to topics listed in the directive is available at the following URL: http://www.deq.state.mt.us/wqinfo.

2. Montana EnviroNet

With public involvement and active participation in water quality management planning and restoration in mind, the department's Monitoring and Data Management Bureau has designed the Montana EnviroNet database. EnviroNet has been developed to convey information about the quality of Montana's rivers, streams, lakes, and wetlands in relation to the Montana Water Quality Standards.

EnviroNet provides the ability to search out statewide water quality information by geographic criteria (waterbody name, watershed unit or county) or by various water quality assessment criteria (water use-support status, suspected pollution problems and sources, etc.). It allows the user to perform custom data queries, develop summary water quality reports, and generate maps. The water quality assessment information available through EnviroNet is stored in the department's Assessment Database that contains summary information from a statewide inventory of water quality data sources. This information is largely limited to those waterbodies that have recently appeared on Montana's list of impaired waters (303(d) List). New assessment information will periodically be added to the EnviroNet database as it becomes available from the department's continuing monitoring and assessment efforts, and other sources. The department views local public involvement as critical in developing water quality restoration plans, closely followed in importance by the need for up-to-date and accurate water quality information. EnviroNet was designed to help address these needs.

3. Wetland Clearinghouse

The primary goal of this recently initiated project is to develop a web-enabled data management system for the collection and dissemination of basic information on Montana wetlands. This project will develop a set of core data fields applicable to wetlands, and provide an Internet based access and data entry system linked to wetland clearinghouse functions described above. It intends to compliment existing wetland projects in Montana, by providing centralized public access to a variety of related information, and data management services that enhance wetland conservation efforts.

This project will deliver more pertinent and accessible information via the Internet to federal, state, and local governments for the protection and preservation of wetland resources by updating key fields in the Corps of Engineers Section 404 permit database. This information will be accessible by other regulatory agencies as well as the general public. Making this information available to the public will also reduce the number of requests for permit statistics that the Helena Office receives. This database, also known as the Regulatory Analysis Management System (RAMS), has historically been used by the Corps as a tool to manage records pertaining to the processing and issuance of 404 permits. Key fields in this database include site specific latitude and longitude information, size and extent of area impacted, and other pertinent fields.

By updating key fields in the database, managers will be able to use the information from RAMS to better address issues of cumulative impacts, wetland losses, and wetland mitigation activities resulting from 404 permitted activities.

4. Porting Underground Storage Tank Data to the Web

The DEQ Underground Storage Tank (UST) and Leaking Underground Storage Tank (LUST) databases contain information on the facilities, tanks information, and the status of these tanks for service station and non-service station facilities with underground storage tanks. There are approximately 2,000 facilities with about 5,000 tanks in the database. The data currently reside in a Microsoft Access database and facilities are geo-referenced in ArcInfo coverage. The DEQ would like to make this information more accessible via the Internet and is working with the Montana State Library's Natural Resources Information System to develop such an interface.

System features will include the following:

- A highly automated procedure that allows the department to periodically export data from the primary UST database, in a pre-determined format, to a server database at NRIS which is accessible over the Internet.
- An Internet-based query and reporting system that allows users to query the database, and generate reports, maps or download files from the online system. This system will have a dual interface: text and map. Both interfaces will have maps as an output option.
- Minimum query functions will allow users to query for facility and tank locations by:

- City, County, or Zip Code
- Compliance status (compliant or non-compliant)
- Tank contents (gasoline, diesel, etc.)
- Facility name and type
- Distance from nearest compliant tank
- Proximity to major State/Federal Highways
- Any combination of above

With these query choices, the following types of queries can be answered:
- Find all non-compliant tanks in Fergus County
- Find all compliant diesel facilities in Helena
- Find all facilities with compliant gasoline tanks on State Highway 200
- Find all cities/towns in Petroleum County more than 20 miles from a compliant facility

The system will also support expanded geographic search options such as Indian Reservations, National Park Service Land, etc. Proximity searches linking UST's to local, state or federal highway system will also be developed.

Porting Public Water Supply Data to the web
The goal of this project is to create a GIS data layer of Public Water Supply (PWS) wells and improve current location information for PWS wells through the use of GIS address matching and other procedures. The PWS coverage will then be made available through an interactive web based query system to allow for ad-hoc search and retrieval of maps, reports, and data

downloads related to PWS wells.

5. Source Water Protection Query System

The DEQ Source Water Protection Section, and others who complete source water delineation and assessment reports for public water systems (PWS), need to utilize data from a variety of sources. To ensure consistency and efficiency, DEQ contracted with NRIS to create a web-based spatial data mapping tool. The mapping tool allows on-the-fly map generation using potential contaminant source data compiled from various DEQ databases. The data are usually provided to NRIS in a Microsoft Access database and represent geo-referenced facilities or sites.

System features include:

- An Internet-based query system that allows users to build a query to identify features within a selected buffer around a point. The system allows the user to generate maps and selected tabular data from the online system.
- Minimum query functions will allow users to query for information at PWS by PWSID, PWS name, City or County,
- Features that can be identified within a selected distance of the PWS include:

With these query choices the following types of queries could be answered:
- Find all USTs within 2 miles of a selected PWS
- Find all PWSs within 0.5 mile of a petroleum pipeline
- Estimate septic system density within a specified distance of a PWS
- Identify all PWS wells or surface water intake structures with a specified county

Air Internet Data Acquisition System (AirIDAS)
The AirIDAS is the first prototype electronic data submittal process the department has developed. This web-enabled system allows companies throughout the state to quickly and easily report daily data to be reviewed by the DEQ. Crucial parameters, such as concentrations of particulate matter less than or equal to ten microns in diameter (PM-10), are monitored on-site and then submitted to the DEQ to ensure compliance with regulations intended to preserve Montana's natural environment.

This system allows all of the stakeholders, the regulated facilities, the database administrator, and the air quality technicians to enter and review air quality data simultaneously. With this type of data collection system in place the department hopes to demonstrate and realize savings in time and money, enhance data quality, and improve the speed and ease of data access.

This system will allow regulated facilities to save time and money in reporting costs, have greater control of data in the submission process, realize new opportunities to improve internal management of environmental data, and achieve a streamlined data submission process.

Action Plan

The department intends to perform additional stakeholder analyses and will determine operating system requirements to provide more comprehensive public access to department databases and information resources. This work will be performed concurrently with the department's enterprise-wide system construction, which is prerequisite to centralized public access to facilities information. Environmental information public access, other than that which already exists or is planned (e.g. the EnviroNet and WaterIDAS systems) will be developed as a second phase of the department's overall plan.

Department IT Budget

Over the course of the last five years the department has become more aware of IT costs and technological changes, and has developed an "information-oriented" philosophy in its business processes. The gathering of information, disseminating that information, and protecting its integrity are all part of the cost of doing business. During the 1995 calendar year, the department spent a total of $500,000.00 to develop the basic infrastructure and data system requirements associated with the reorganization. Following detailed planning and with strong leadership from senior management, the department has slowly increased its budget to support a more comprehensive IT reform.

Total budgeted IT-related department expenditures for state fiscal year 2000 were as follows:

$650,000	Equipment purchases	
	$190,000	IT studies and planning
	$882,000	Database development
	$960,000	IT infrastructure and staff
	$2,682,000	**TOTAL SFY2000**

Fiscal year 2001 planned expenditures include the following:

$260,000	Equipment purchases
$698,000	Database development
$1,170,000	IT infrastructure and staff
$2,128,000	**TOTAL SFY2001**

An additional $3.3 million has been requested through the executive planning process for state fiscal years 2002-2003 to support continued implementation of the department's IT plan. The department has also submitted legislative budgetary notification of its intent to apply for this One Stop Reporting Grant. Receipt of EPA One Stop Grant Program assistance would allow the department to leverage its current and requested revenues to the maximum possible extent and accelerate IT program pace.

IT Staffing

The department began with a minimum of centralized staff and individual department programs provided their own programmer/analyst support. Through contractor and department analyses performed in 1997-1998, it became apparent that IT structural revisions were required as a precursor to system modernization. DEQ Director Mark Simonich created two new IT bureaus– a Systems Administration Bureau and a Systems Solutions Bureau. Analyst/data management functions were retained within the individual programs, but programming staff was centralized. Six positions were moved to the new centralized bureaus. Additional IT-related positions were authorized by the 1999 Montana Legislature, bringing the total number of centralized, fulltime IT employees to 19.

Department IT structure organizational information and program descriptions can be viewed at the department's web site at http://www.deq.state.mt.us.

IT Implementation Plan and Timeline

Montana DEQ is committed to working with EPA to develop a comprehensive, three- to five-year plan to reform environmental reporting and data management within 120 days of the beginning of the One Stop Grant period. The department's past IT planning efforts and available budget contribution will greatly facilitate the process and ensure successful and timely project implementation.

IT Performance Measures

The department intends to work closely with EPA staff upon receipt of this grant to develop specific measurable criteria of program performance that relate to the goals and commitments expressed in the Montana 120-day plan.

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